

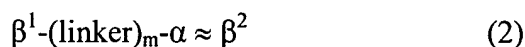
AMENDMENT

In the Claims:

Please amend the claims as follows:

Please replace the presently pending claims with the following claims:

1. (Twice amended) A method to provide a subject with glycoprotein hormone activities which method comprises administering to a subject in need of said activities a composition of the formula:



wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate glycoprotein hormone, or a variant thereof;

C₁ "α" has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or a variant thereof;

"linker" is a linker moiety; and

"≈" is a noncovalent link between α and β^2 ;

m is 0 or 1;

wherein each of β^1 and β^2 is the native β subunit of the same glycoprotein hormone or a variant thereof.

2. The method of claim 1 wherein β^1 and β^2 are native β subunits.

3. The method of claim 1 wherein β^1 and β^2 exhibit different biological half-lives.

4. (Amended) The method of claim 1 wherein one of β^1 and β^2 confers agonist activity and the other confers antagonist activity.

C₂ → 9₁ D (Amended) The method of claim 1 wherein said subject is being treated ^{to} ~~for~~ enhanced fertility.

C3 10/6. (Twice amended) The method of claim 9 wherein
both β^1 and β^2 confer FSH agonist activity on said composition; or
both β^1 and β^2 confer CG agonist activity; or
both β^1 and β^2 confer LH antagonist activity.

11/7. (Amended) The method of claim 1 wherein said subject is being treated so as to
become infertile or to remain infertile.

C4 12/8. (Amended) The method of claim 11 wherein both β^1 and β^2 confer FSH antagonist
activity on said composition; or
wherein both β^1 and β^2 confer CG antagonist activity; or
wherein both β^1 and β^2 confer LH agonist activity.

[13/9. The method of claim 1 wherein the subject is in need of treatment for polycystic
ovarian disease.

14/10. (Twice amended) The method of claim 13 wherein
both β^1 and β^2 confer FSH agonist activity; or
both β^1 and β^2 confer LH antagonist activity.

C5 25/11. (Twice amended) A glycosylated or nonglycosylated composition of the formula
 $\beta^2 \approx \alpha\text{-(linker)}_m\text{-}\beta^1$ (1); or
 $\beta^1\text{-(linker)}_m\text{-}\alpha \approx \beta^2$ (2)
wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate
glycoprotein hormone, or a variant thereof;

" α " has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or
a variant thereof;

"linker" is a linker moiety; and

" \approx " is a noncovalent link between α and β^2 ;

m is 0 or 1;

wherein each of β^1 and β^2 is the native β subunit of the same glycoprotein hormone or a
variant thereof.

~~30~~ ¹² (Twice amended) A pharmaceutical composition which regulates the glycoprotein hormone concentrations in a mammal which comprises an effective amount of the composition of the formula

$$\beta^2 \approx \alpha\text{-(linker)}_m\text{-}\beta^1 \quad (1); \text{ or}$$

$$\beta^1\text{-(linker)}_m\text{-}\alpha \approx \beta^2 \quad (2)$$

in admixture with at least one pharmaceutically acceptable excipient; and

wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate glycoprotein hormone, or a variant thereof;

C5 "α" has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or a variant thereof;

"linker" is a linker moiety; and

"≈" is a noncovalent link between α and β^2 ;

each of m and n is independently 0 or 1;

wherein each of β^1 and β^2 is the native β subunit of the same glycoprotein hormone or a variant thereof.

~~26~~ ²⁵ 21. (Amended) The composition of claim ~~1~~ ²⁵, wherein β^1 is FSHβ or a variant thereof and β^2 is FSHβ or a variant thereof.

~~27~~ ²⁵ 22. (Amended) The composition of claim ~~1~~ ²⁵, wherein β^1 is LHβ or a variant thereof and β^2 is LHβ or a variant thereof.

C6 ~~28~~ ²⁵ 23. (Amended) The composition of claim ~~1~~ ²⁵, wherein β^1 is TSHβ or a variant thereof and β^2 is TSHβ or a variant thereof.

~~29~~ ²⁵ 24. (Amended) The composition of claim ~~1~~ ²⁵, wherein β^1 is CGβ or a variant thereof and β^2 is CGβ or a variant thereof.

Please cancel claims 25-28.

Please add the following claims:

15/29. (New) The method of claim 1, wherein both of β^1 and β^2 confer agonist activity.

20/30. (New) The method of claim 1, where both of β^1 and β^2 confer antagonist activity.

D 5/31. (New) The ^{method}~~composition~~ of claim 4, wherein β^1 is FSH β or a variant thereof and β^2 is FSH β or a variant thereof.

D 6/32. (New) The ^{method}~~composition~~ of claim 4, wherein β^1 is LH β or a variant thereof and β^2 is LH β or a variant thereof.

D 7/33. (New) The ^{method}~~composition~~ of claim 4, wherein β^1 is TSH β or a variant thereof and β^2 is TSH β or a variant thereof.

D 8/34. (New) The ^{method}~~composition~~ of claim 4, wherein β^1 is CG β or a variant thereof and β^2 is CG β or a variant thereof.

C7 16/35. (New) The ^{method}~~composition~~ of claim ¹⁵~~29~~, wherein β^1 is FSH β or a variant thereof and β^2 is FSH β or a variant thereof.

D 17/36. (New) The ^{method}~~composition~~ of claim ¹⁵~~29~~, wherein β^1 is LH β or a variant thereof and β^2 is LH β or a variant thereof.

D 18/37. (New) The ^{method}~~composition~~ of claim ¹⁵~~29~~, wherein β^1 is TSH β or a variant thereof and β^2 is TSH β or a variant thereof.

D 19/38. (New) The ^{method}~~composition~~ of claim ¹⁵~~29~~, wherein β^1 is CG β or a variant thereof and β^2 is CG β or a variant thereof.

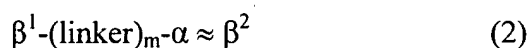
39. (New) The composition of claim 30, wherein β^1 is FSH β or a variant thereof and β^2 is FSH β or a variant thereof.

40. (New) The composition of claim 30, wherein β^1 is LH β or a variant thereof and β^2 is LH β or a variant thereof.

41. (New) The composition of claim 30, wherein β^1 is TSH β or a variant thereof and β^2 is TSH β or a variant thereof.

42. (New) The composition of claim 30, wherein β^1 is CG β or a variant thereof and β^2 is CG β or a variant thereof.

43. (New) A method to enhance fertility in a subject being treated for enhanced fertility which method comprises administering to said subject a composition of the formula:



wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate glycoprotein hormone, or a variant thereof;

" α " has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or a variant thereof;

"linker" is a linker moiety; and

" \approx " is a noncovalent link between α and β^2 ;

m is 0 or 1;

with the proviso that when one of β^1 and β^2 is a CG β agonist then the other is not an FSH β agonist.

44. (New) The method of claim 43, wherein one of β^1 and β^2 confers FSH agonist activity and the other confers LH antagonist activity; or one of β^1 and β^2 confers LH antagonist activity and the other confers CG agonist activity.